

Transit Planning Board

Travel Demand Forecasting Methodology and Results

1.0 Ridership Estimate Objective

Two regional transit concept plans were prepared as part of the Transit Planning Board's work towards developing a plan that can be accepted and advanced further by the TPB. The concept plans identify potential modes and generalized alignments for various corridors. Order-of-magnitude costs (capital and O&M) were identified. However, TPB staff felt there was a need to identify potential ridership benefits that are associated with those costs. After much discussion, it was agreed that abbreviated travel demand model forecasts would be completed as a means to estimate order-of-magnitude ridership potential. The time available to complete these abbreviated forecasts was short (nine days). Further, there was little definition to the concept transit plans. Thus, efforts focused on defining and coding only the fixed guideway components of the concept plans.

2.0 Concept Plan Definitions

2.1 Concept Plan 1

Rail

In addition to fixed guideway lines already assumed in Envision 6, this concept plan includes the following fixed guideway elements:

1. MARTA West Line HRT extension to I-285/MLK
2. MARTA NW Line HRT extension from Bankhead to Cumberland/Galleria
3. MARTA HRT branch from Lindbergh to Emory to East Lake MARTA.
4. LRT line from Town Center to Doraville along I-75 and I-285, with an additional segment from Smyrna to Cumberland/Galleria
5. Regional Rail – Lines from downtown Atlanta to Athens, Gainesville, Breman, Senoia, Griffin and Madison

Station location assumptions were based on information that was in previous studies. For projects without previous studies, assumptions regarding station locations. Station-to-station travel times were based on average speed assumptions. Appendix A presents station and travel time assumptions used for the various new rail lines assumed in Concept Plan 1.

Rail line configurations assumed in Concept Plan 1 were as follows:

MARTA HRT

- North Springs to I-285/MLK via Lindbergh/Emory
- North Springs to Airport
- Doraville to Airport
- Indian Creek to Cumberland via Procter Creek branch extension

LRT

- Town Center Mall/Busbee p&r to Doraville
- Smyrna to Doraville

Regional Rail

- Gainesville to Jonesboro
- Sugar Hill to Senoia
- Athens to Griffin
- Madison to Southern Crescent
- Breman to Southern Crescent

Freeway BRT

Concept Plan 1 includes I-20 East BRT (to Conyers), I-75 BRT (McDonough to Southern Crescent) and I-285 BRT (I-20 East to I-20 West). Specific BRT bus service plans were not defined as part of the concept plan work. Rather, existing coded express routes on these facilities were modified to reflect improved bus services in these corridors.

Express Routes

Express routes were also modified from Envision 6's transit network to take into account the fixed guideway elements of Concept Plan 1. A specific express route service plan was not defined as part of the concept plan work. Rather, changes were made to express routes as a means to provide a representation of how express service might look with an expanded fixed guideway network. Some express routes were eliminated. Other routes were turned back at new rail stations. Frequencies on many routes were either reduced or improved. Specific express route network changes are presented in Appendix A.

Arterial Rapid Bus

It is anticipated that there would be several Arterial Rapid Bus corridors as part of Concept Plan 1. Specific Arterial Rapid Bus projects were not defined as part of the concept plan work. So, frequencies were improved on select MARTA routes to reflect a representation of Arterial Rapid Bus projects.

Non-Coded Service Improvements

It is also important to note that due to time constraints, many critical transit service elements that would be part of Concept Plan 1 were not coded. Those include:

- New local bus service in counties that presently don't have bus service
- Expanded local bus service in areas that presently have bus service
- New activity center circulators
- New intercity regional bus service
- New feeder bus or modified existing bus connections to fixed guideway transit.

Maps illustrating the concept plans are provided in Appendix C.

2.2 Concept Plan 2

Rail

In addition to fixed guideway lines already assumed in Envision 6, this concept plan included the following fixed guideway elements that were coded in the network:

1. MARTA West Line HRT extension to Fulton Industrial Boulevard
2. MARTA North Line HRT extension to Windward
3. MARTA Northeast Line extension SR 316
4. MARTA Southeast branch to Southern Crescent
5. Northwest LRT line from Town Center to Arts Center

6. LRT from Lindbergh to Emory to East Lake MARTA
7. Commuter rail from Atlanta to Griffin
8. Commuter rail from Athens to Atlanta

Station locations were based on any information that was in previous studies. For projects without previous studies, assumptions regarding station locations. Station-to-station travel times were based on average speed assumptions. Appendix B presents station and travel time assumptions used for the various new rail lines assumed in Concept Plan 2.

Rail line configurations assumed in Concept Plan 2 were as follows:

MARTA HRT

- North Springs to Airport
- SR 316 to Airport
- Lenox to Southern Crescent
- Indian Creek to FIB
- Avondale to Bankhead

LRT

- Town Center Mall/Busbee p&r to Arts Center Doraville
- Marietta to Lindbergh/Emory to East Lake MARTA

Commuter Rail

- Griffin to Atlanta
- Athens to Atlanta

Freeway BRT

Concept Plan 2 includes I-20 East BRT (to Conyers), I-75 BRT (McDonough to Southern Crescent) and I-285 BRT (I-20 East to I-20 West). Specific BRT bus service plans were not defined as part of the concept plan work. Rather, existing coded express routes on these facilities were modified to reflect improved bus services in these corridors.

Express Routes

Express routes were also modified from Envision 6's transit network to take into account the fixed guideway elements of Concept Plan 2. A specific express route service plan was not defined as part of the concept plan work. Rather, changes were made to express routes as a means to provide a representation of how express service might look with an expanded fixed guideway network. Some express routes were eliminated. Other routes were turned back at new rail stations. Frequencies on many routes were either reduced or improved. Specific express route network changes are presented in Appendix B.

Arterial Rapid Bus

It is anticipated that there would be several Arterial Rapid Bus corridors as part of Concept Plan 2. Specific Arterial Rapid Bus projects were not defined as part of the concept plan work. So, frequencies were improved on select MARTA routes to reflect a representation of Arterial Rapid Bus projects.

Non-Coded Service Improvements

It is also important to note that due to time constraints, many critical transit service elements that would be part of Concept Plan 1 were not coded. Those include:

- New local bus service in counties that presently don't have bus service
- Expanded local bus service in areas that presently have bus service
- New activity center circulators
- New intercity regional bus service
- New feeder bus or modified existing bus connections to fixed guideway transit.

Maps illustrating the concept plans are provided in Appendix C.

3.0 Network Coding Process

Transit networks were coded using the plan definitions described above. As previously noted, network coding focused on rail lines and express bus routes. No effort was made to code the likely required feeder bus routes, new local bus service, activity center circulators or suburban intercity bus routes. The schedule did not allow for defining the concept plans to this level of detail, nor did it allow for coding such routes.

4.0 Model Application Process

There are literally hundreds of processes in a full application of the ARC model. The processes are assembled in a stepwise fashion and a full "run" of the model takes place with control or "script" language. These analyses reflect an abbreviated application, where particular pieces of the full ARC model script were assembled to speed up the running time.

In general, the approach involved the following steps:

1. Code the transit networks
2. Run the access pieces of ARC's scripts (e.g., walk to local bus, drive to premium, etc.)
3. Run modal choice
4. Run the transit assignments

A model run of the Envision 6 transit network was completed with this abbreviated approach. Results were then compared back to the official Envision 6 results, to ensure that results with the abbreviated approach were reasonably similar. Comparison results are as follows:

Table 4-1
Mode Share Comparisons

Trip Purpose	Total Trips		Transit Trips	
	E-6	Abr. Model	E-6	Abr. Model
HBW	4,599,717	4,599,716	181,685	179,754
HBO	8,268,750	8,268,752	140,205	139,691
NHB	5,847,634	5,847,636	65,201	64,852
Total	18,716,101	18,716,104	387,091	384,297

**Table 4-2
Transit Boarding Comparisons**

Mode	Mode #	Env6	Abbrev. Run	Diff.	% Diff.
Shuttles	10	6,528	6,533	5	0.08%
MARTA Local	14	194,156	191,634	-2,522	-1.30%
Rail (HRT/LRT/Streetcar)	15	355,451	357,014	1,563	0.44%
MARTA Express	16	2,148	2,307	159	7.40%
MARTA Premium BRT	18	23,464	23,648	184	0.78%
MARTA Arterial BRT	19	13,993	14,018	25	0.18%
CCT Local	24	11,795	11,763	-32	-0.27%
CCT Express	28	50,171	48,725	-1,446	-2.88%
C-TRAN Local	34	6,620	6,622	2	0.03%
GCT Local	44	14,614	14,589	-25	-0.17%
GCT Express	46	1,258	1,213	-45	-3.58%
Commuter Rail	53	1,154	1,166	12	1.04%
State Owned Local	54	12,859	12,738	-121	-0.94%
GRTA Express	56	10,399	9,922	-477	-4.59%
GRTA Premium BRT	58	9,203	8,706	-497	-5.40%
Hall County	74	605	605	0	0.00%
Total		714,418	711,203	-3,215	-0.45%

5.0 Concept Plan Order-of-Magnitude Ridership Estimates

As described above, forecasts developed for the Concept Plans were based on an abbreviated model process, and did not include a full network coding effort. Therefore, results presented to the TPB were limited to basic ridership characteristics (e.g., system boardings, mode shares). Further, it was specifically noted to TPB Board members what these numbers were and were not. It was noted that the level of effort put into these forecasts were no where near the effort put into developing forecasts for a corridor project, such as The Beltline, or in ARC's Envision 6 effort. Rather, these numbers were described as "order-of-magnitude", just to provide Board members with some sense of numbers that they can begin to discuss. It was also duly noted that a more extensive and complete forecasting effort would be required to accurately gauge potential ridership benefits.

5.1 Transit Boardings

Order-of-magnitude estimates were developed that were based on based on travel demand forecast results, plus an additional ridership estimate to account for the expanded local and new intercity regional bus network that is included in the Concept Plans, but not coded in the networks. We estimated that there were 5,500 daily revenue bus-hours of service that was not coded in the networks. Assuming an average 15-20 riders per bus-hour for these additional, uncoded bus services, there could potentially be an additional 100,000 transit boardings on top of the modeled forecast. Table 5-1 presents resulting boarding estimates for the two concept plans, compared to the Envision 6 and 2005 model results. Because of the uncertainty of ridership for the uncoded routes, ridership results to the TPB Board were presented as a range.

A closer review was given to transit boardings for specific fixed guideway modes. Table 5-2 presents those results. It is important to keep in mind that these forecasts do not include expanded feeder bus services to fixed guideway stations. These results were not presented to the TPB Board.

Table 5-1
Ridership Forecasts by Mode (Boardings)

Service Type	Mode Number	2005 Model	2030 E-6	2030 Concept 1	2030 Concept 2
Shuttles	10	6,147	6,528	4,999	5,470
MARTA Local	14	193,956	193,435	196,424	193,014
Rail (HRT/LRT/Streetcar)	15	185,549	355,451	393,098	433,657
MARTA Express	16	672	2,148	3,948	1,607
MARTA Premium BRT	18		23,464	26,203	24,026
MARTA Arterial BRT	19		13,993	14,064	14,393
CCT Local	24	14,014	11,795	12,173	12,915
CCT Express	26	1,868			
CCT Premium BRT	28		50,171	17,920	18,483
C-TRAN Local	34	4,747	6,620	6,282	5,574
GCT Local	44	10,253	14,614	14,663	15,974
GCT Express	46	1,368	1,258	4,512	907
Commuter Rail	53		1,154	27,430	5,281
State Owned Local	54		12,859	12,846	12,283
GRTA Express	56	4,199	10,399	12,537	13,477
GRTA Premium BRT	58		9,203	6,572	10,356
Hall County	74	376	605	680	605
Uncoded Route Est.	n/a	0	0	100,000	100,000
Total		423,149	713,697	854,351	868,022
Change from 2005			290,548	431,202	444,873

Table 5-2
Fixed Guideway Ridership (Boardings)

Rail Type	Envision 6	Concept 1	Concept 2
LRT	0	26,076	46,840
MARTA	264,316	287,496	310,126
Beltline	50,218	48,211	48,412
Peachtree Streetcar	27,436	28,141	27,229
Commuter/Regional Rail	1,154	27,430	5,281
Emory/Decatur	13,481	0	0
Southern Crescent-Airport	0	3,174	1,050
TOTAL	356,605	420,528	438,938

5.2 Mode Share Results

Order-of-magnitude estimates of regional transit mode shares were also developed. Results from the model were presented as a range, with that range being 5 to 10% higher than model output results. Again, since nearly all of the expanded bus service was not coded, a definitive transit mode share could not be determined. As an example, the travel demand model assigned 189,939 HBW person trips to the transit network with Concept Plan 1. Because of the uncertainty of additional riders that could be drawn to the uncoded bus services, we presented an order-of-magnitude range of 199,436 to 218,430 (5 to 10% higher). Only HBW order-of-magnitude mode share estimates were presented to the TPB Board.

Table 5-3
Regional Transit Mode Shares

Trip Purpose	Year/ Model	Transit Trips (Low) (High)		Total Trips	% Mode Split (Low) (High)	
Home-to-Work	2005	108,778		2,847,726	3.8%	
	2030 E-6	181,685		4,599,717	3.9%	
	2030 C-1	199,436	218,430	4,599,703	4.3%	4.7%
	2030 C-2	198,648	217,567	4,599,702	4.3%	4.7%
Home-to-Other	2005	89,833		6,097,586	1.5%	
	2030 E-6	140,205		8,268,750	1.7%	
	2030 C-1	154,265	168,957	8,268,760	1.9%	2.0%
	2030 C-2	154,398	169,103	8,268,768	1.9%	2.0%
Non-Home Based	2005	36,958		4,109,800	0.9%	
	2030 E-6	65,201		5,874,634	1.1%	
	2030 C-1	73,403	80,394	5,847,620	1.3%	1.4%
	2030 C-2	73,368	80,355	5,847,618	1.3%	1.4%
Total	2005	235,569		13,055,112	1.8%	
	2030 E-6	387,091		18,743,101	2.1%	
	2030 C-1	427,104	467,781	18,716,083	2.3%	2.5%
	2030 C-2	426,414	467,025	18,716,088	2.3%	2.5%

6.0 Next Steps

Finally, it is important to note that a true measurement of ridership benefits for a final agreed upon Concept Plan **must** go through a more thorough definition of transit routes, frequencies, station locations, etc. This refined definition of the Concept Plan must then be coded in its entirety and run through the full ARC travel demand model process. This will then allow for a more definitive analysis and presentation of potential ridership benefits. As part of that work effort, we believe it will be important to focus on corridor and activity center benefits, and not regional numbers.

APPENDIX A
CONCEPT 1 RAIL DISTANCES AND TRAVEL TIMES
CONCEPT 1 EXPRESS BUS NETWORK CHANGES

Heavy Rail Extensions

I-20 W Extension from HE Holmes

Station	Station	Distance	Speed
HE Holmes	I-285/MLK	1.71	35

Lindbergh-Emory-Decatur (follow RR tracks)

Station	Station	Distance	Speed
Lindbergh	Cheshire Bridge	1.42	30
Cheshire Bridge	Emory/Clifton Road	2.45	30
Emory/Clifton Road	Clairmont/Decatur Rd.	1.00	30
Clairmont/Decatur Rd.	East Lake MARTA	1.92	30

Bankhead-Cumberland Ext.

Station	Station	Distance	Speed
Bankhead	Hollywood Rd.	3.60	35
Hollywood Rd.	Atlanta Rd/Elizabeth Lane	2.30	35
Atlanta Rd/Elizabeth Lane	I-285/Paces Ferry	2.10	35
I-285/Paces Ferry	Cobb Pkwy/Cumberland Mall	1.40	35

Light Rail Lines

I-285 N./I-75 NW LRT - Doraville to Town Center

Station	Station	Distance	Speed
Doraville MARTA	I-285/Shallowford	2.21	35
I-285/Shallowford	Ashford Dunwoody/Hammond	2.13	30
Ashford Dunwoody/Hammond	Dunwoody MARTA	0.28	25
Dunwoody MARTA	Hammond/GA 400	0.85	25
Hammond/GA 400	Roswell Rd./Hammond	1.21	25
Roswell Rd./Hammond	I-285/Northside Drive	3.73	30
I-285/Northside Drive	I-75/Akers Mill	2.20	35
I-75/Akers Mill	Cobb Pkwy./Cumberland Mall	0.74	25
Cobb Pkwy./Cumberland Mall	Cobb Pkwy/Windy Ridge	0.59	25
Cobb Pkwy/Windy Ridge	Cobb Pkwy/Windy Hill Road	1.19	30
Cobb Pkwy/Windy Hill Road	Cobb Pkwy/Barclay Circle	2.22	30
Cobb Pkwy/Barclay Circle	Cobb Pkwy/South 120 Loop	0.89	30
Cobb Pkwy/South 120 Loop	Cobb Pkwy/Roswell St.	0.65	30
Cobb Pkwy/Roswell St.	I-75/N. 120 Loop	1.10	30
I-75/N. 120 Loop	I-75/Bells Ferry	2.71	40
I-75/Bells Ferry	I-75/Town Center Mall	1.65	40
I-75/Town Center Mall	I-75/Chastain Rd.	1.74	40

Smyrna Branch

Station	Station	Distance	Speed
Smyrna (Atlanta Rd./Spring St.)	Cumberland Mall	2.81	35

Regional Rail Lines

Athens-Atlanta

Station	Station	Distance	Speed
Athens	Bogard	9.59	45
Bogard	Winder	11.83	55
Winder	Dacula	11.09	55
Dacula	Lawrenceville (SR 120)	6.78	45
Lawrenceville (SR 120)	Regan Pkwy	6.00	45
Regan Pkwy	Lilburn (Killian Hill Rd.)	3.07	45
Lilburn (Killian Hill Rd.)	Tucker (Lawrenceville Hwy)	5.82	35
Tucker (Lawrenceville Hwy)	Emory (same node as LRT line)	8.07	35
Emory (same node as LRT line)	Atrlantic Station/17th St.	5.97	25
Atrlantic Station/17th St.	Five Points	3.46	25

Lovejoy-Griffin Extension

Station	Station	Distance	Speed
Lovejoy	Hampton (Atl Motor Speedway)	5.02	45
Hampton (Atl Motor Speedway)	Griffin	10.42	55

Breman-Atlanta

Station	Station	Distance	Speed
Breman	Temple	7.71	55
Temple	Villa Rica	7.16	55
Villa Rica	Douglasville (Downtown)	10.79	55
Douglasville (Downtown)	Austell (Downtown)	8.53	45
Austell (Downtown)	Mableton (Floyd Rd.)	3.62	35
Mableton (Floyd Rd.)	Five Points	13.82	25

Madison-Atlanta

Station	Station	Distance	Speed
Madison	Social Circle	16.00	55
Social Circle	Covington	10.50	55
Covington	Conyers (Downtown)	10.37	55
Conyers (Downtown)	Lithonia (Turner Hill Rd.)	5.23	55
Lithonia (Turner Hill Rd.)	Stone Mtn. (US 78)	9.62	45
Stone Mtn. (US 78)	Avondale MARTA	8.94	35
Avondale MARTA	Five Points	6.84	25

Gainesville-Atlanta

Station	Station	Distance	Speed
Gainesville	Oakwood	6.13	55
Oakwood	Sugar Hill/Hwy. 20	12.31	55
Sugar Hill/Hwy. 20	Suwannee/McGinnis Ferry	5.38	55
Suwannee/McGinnis Ferry	Duluth/SR 120	4.63	55
Duluth/SR 120	Norcross/Jimmy Carter Blvd.	6.73	45
Norcross/Jimmy Carter Blvd.	Lenox MARTA	10.10	40
Lenox MARTA	Atlantic Station/17th St.	4.82	35
Atlantic Station/17th St.	Five Points	3.46	25

Senoia-Atlanta

Station	Station	Distance	Speed
Senoia	Peachtree City/SR 34	6.83	55
Peachtree City/SR 34	Tyrone/Tyorne Rd.	6.28	55
Tyrone/Tyorne Rd.	Union City/Flat Shoals Rd.	8.32	55
Union City/Flat Shoals Rd.	Red Oak/S. Fulton Pkwy.	3.55	45
Red Oak/S. Fulton Pkwy.	East Point MARTA	6.58	40
East Point MARTA	Five Points	6.65	30

CONCEPT PLAN 1 - EXPRESS BUS ROUTE CHANGES

I-20 East	1	Add a Stonecrest to Southern Crescent MARTA route Service frequencies - 30 peak/60 midday - 2 dir. Include a Southern Crescent to Airport rail connection.
	2	Extend Route 420 out to Covington. Frequencies remain same as E-6. Add p/r in Covington area.
	3	Add midday service on GR 428 (30 min.). Turnback route at Doraville MARTA/LRT station.
I-75 South	1	Turnback GR 430 at Southern Crescent. Modify to 2-dir. Service at 15 peak/30 midday (both dir.).
	2	No change to GR 430M
	3	Eliminate GR 430R
	3	No change to GR 431
	4	Turnback GR 432 at Southern Crescent. No freq. change.
	5	Turnback GR 433 at Southern Crescent. Modify freq. to 30 peak/30 midday (both dir.)
	6	Turnback GR 434 at Southern Crescent. No freq. change.
	7	Turnback GR 440J and GR 440J (R) at Southern Crescent. Modify freq. 30 peak/60 midday (both dir.)
	8	Eliminate GR 440S/SR.
	9	Turnback GR 442 at Southern Crescent. Modify freq. to 30 peak/30 midday (both dir.).
	10	Eliminate GR 441
I-85 South	1	Eliminate GR 445A/B.
	2	Eliminate GR 450M
	3	Turnback GR 451 at College Park MARTA. Modify freq. to 15 one dir. (peak period only)
	4	Turnback GR 455 at College Park MARTA. Modify freq. to 15 peak/30 midday both dir.
I-20 West	1	Turnback GR 450/460R at Holmes MARTA. Modify freq. to 15 peak/30 midday both dir.
	2	No changes to GR 461/461R
	3	Turnback GR 462 at Holmes MARTA. Keep freq. at 15 peak dir. peak period only.
	4	Eliminate GR 463.
	5	No change to GR 465 A/B
	6	Turnback GR 470/470R at Holmes MARTA. Modify freq. to 20 peak/30 midday both dir.
	7	No change to GR 475.
	1	Modify 140/140A MANSEL freq. to 10 peak/15 midday. Extend to Dunwoody MARTA/I-285 LRT station.
	2	Modify 143/143A WINDWRDXP to 10 peak/15 midday. Extend to Dunwoody MARTA/I-285 LRT station.
	3	Turnback GR 400NS at Dunwoody MARTA/I-285 station. Modify freq. to 20 peak/30 midday both dir.
	4	Eliminate GR 400D
	5	Modify freq. for GR 407 to 30 peak/60 midday (both dir.) Turnback at Dunwoody MARTA/I-285 LRT station.
	6	Change GR 408/408R freq. to 30 peak/60 midday (both dir.)
	7	No change to GR 409.
	8	Add new route. SR 92 from Woodstock to GA 400/Holcomb Bridge, then to Dunwoody MARTA/I-285 station. 30 peak/30 midday.
	9	Add new route. SR 120 from Duluth to GA 400/Old Milton Pkwy, then to Dunwoody MARTA/I-285 station. 30 peak/30 midday.
	1	Eliminate GR 410.
	2	Eliminate GR 412/412R
	3	Eliminate GR 412/412R OP
GA 400	4	Turnback GR 413 at Doraville MARTA/I-285 LRT. No change in freq.
	5	Eliminate GR 415.
	6	Keep GW 101/101A, but turnback at Doraville MARTA/I-285 LRT. Keep freq. at 10 peak/15 midday (2-dir. service).
	7	Eliminate GW 102/102A
	8	Eliminate GW 103/103A
	9	Eliminate GW 104A.
	10	Turnback GW 104B at Doraville MARTA/I-285 LRT. Modify freq. to 30 peak/30 midday, both dir.
	1	Keep C100 DB/DBR in network. No change in freq.
	2	Keep C 100 DX in network. No change in freq.
I-85 NE	3	Turnback C100 MA/MAR at Cumberland HRT/I-285 LRT. Modify frequencies to 10 peak/15 midday (both dir).
	4	Eliminate C 100 P2/P2R.
	5	Keep C101 DX in network. No change in freq.
	6	Eliminate C 101 M/MR
	7	Keep C102 MX in network. No change in freq.
	8	Turnback C 104M/MR at Cumberland HRT/I-285 LRT. Keep freq. at 10 peak/30 midday.
	9	Turnback C105P/PR at Cumberland HRT/I-285 LRT. No change in freq.
	10	Eliminate C 106M2/M2R.
	11	Turnback C 109D/DR at Cumberland. No change in freq.
	12	Turnback GR 477A/B at Cumberland HRT/I-285 LRT. 15 pk/30 mid freq.
	13	Eliminate GR 484 in network.
	14	Turnback GR 490A/B at Chastain Rd. LRT. Change freq. to 15 peak/30 midday.
	15	Turnback GR 492 at Chastain Rd. LRT Change freq. to 15 peak/no midday (both dir.).
	1	Modify GR 427 freq. to 30 peak/30 midday both dir. Turnback at Doraville MARTA/I-285 LRT.
	2	Extend GR 488A/B to Airport. Change midday freq. to 30-min. Change Holmes Stop to the new I-285/MLK MARTA stop.
	3	Change GR 418 freq. to 30 peak/60 midday.
	4	Add new route - I-285/MLK-Cumberland (same stops as GR 488A/B. Code at 30 peak/no off-peak.
I-75 NW	1	Modify GR 427 freq. to 30 peak/30 midday both dir. Turnback at Doraville MARTA/I-285 LRT.
	2	Extend GR 488A/B to Airport. Change midday freq. to 30-min. Change Holmes Stop to the new I-285/MLK MARTA stop.
	3	Change GR 418 freq. to 30 peak/60 midday.
	4	Add new route - I-285/MLK-Cumberland (same stops as GR 488A/B. Code at 30 peak/no off-peak.
I-285	1	Modify GR 427 freq. to 30 peak/30 midday both dir. Turnback at Doraville MARTA/I-285 LRT.
	2	Extend GR 488A/B to Airport. Change midday freq. to 30-min. Change Holmes Stop to the new I-285/MLK MARTA stop.
	3	Change GR 418 freq. to 30 peak/60 midday.
	4	Add new route - I-285/MLK-Cumberland (same stops as GR 488A/B. Code at 30 peak/no off-peak.

APPENDIX B
CONCEPT 2 RAIL DISTANCES AND TRAVEL TIMES
CONCEPT 2 EXPRESS BUS NETWORK CHANGES

Heavy Rail Extensions

I-85 NE Extension from Doraville

Station	Station	Distance	Speed
Doraville	Jimmy Carter/Buford Hwy	4.00	40
Jimmy Carter/Buford Hwy	I-85/Indian Trail pnr	3.28	40
I-85/Indian Trail pnr	I-85/Pleasant Hill	3.13	40
I-85/Pleasant Hill	I-85/SR 316	1.95	35

GA 400 N Extension from North Springs

Station	Station	Distance	Speed
North Springs	Northridge	2.80	40
Northridge	Mansell pnr	4.36	40
Mansell pnr	Old Milton Pkwy	3.18	40
Old Milton Pkwy	Windward pnr	1.45	35

I-20 W Extension from HE Holmes

Station	Station	Distance	Speed
HE Holmes	I-285/MLK	1.71	35
I-285/MLK	I-20/FIB	2.17	35

Southern Crescent Spur

Station	Station	Distance	Speed
East Point MARTA	Downtown Hapeville	2.38	35
Downtown Hapeville	Southern Crescent Transp. Ctr.	1.80	35

Light Rail Lines

I-75 NW LRT - Arts Center to Town Center

Station	Station	Distance	Speed
Arts Center	Beltline Northside Dr. Station	1.39	30
Beltline Northside Dr. Station	I-75/West Paces Ferry	4.65	40
I-75/West Paces Ferry	I-75/Akers Mill	2.90	40
I-75/Akers Mill	Cobb Pkwy./Cumberland Mall	0.74	25
Cobb Pkwy./Cumberland Mall	Cobb Pkwy/Windy Ridge	0.59	25
Cobb Pkwy/Windy Ridge	Cobb Pkwy/Windy Hill Road	1.19	30
Cobb Pkwy/Windy Hill Road	Cobb Pkwy/Barclay Circle	2.22	30
Cobb Pkwy/Barclay Circle	Cobb Pkwy/South 120 Loop	0.89	30
Cobb Pkwy/South 120 Loop	Cobb Pkwy/Roswell St.	0.65	30
Cobb Pkwy/Roswell St.	I-75/N. 120 Loop	1.10	30
I-75/N. 120 Loop	I-75/Bells Ferry	2.71	40
I-75/Bells Ferry	I-75/Town Center Mall	1.65	40
I-75/Town Center Mall	I-75/Chastain Rd	1.74	40

Lindbergh-Emory-Decatur (follow RR tracks)

Station	Station	Distance	Speed
Lindbergh	Cheshire Bridge	1.42	25
Cheshire Bridge	Emory/Clifton Road	2.45	25
Emory/Clifton Road	Clairmont/Decatur Rd.	1.00	25
Clairmont/Decatur Rd.	East Lake MARTA	1.92	25

Commuter Rail Lines

Athens-Atlanta

Station	Station	Distance	Speed
Athens	Bogard	9.59	45
Bogard	Winder	11.83	55
Winder	Dacula	11.09	55
Dacula	Lawrenceville (SR 120)	6.78	45
Lawrenceville (SR 120)	Reagan Pkwy	6.00	45
Reagan Pkwy	Lilburn (Killian Hill Rd.)	3.07	45
Lilburn (Killian Hill Rd.)	Tucker (Lawrenceville Hwy)	5.82	35
Tucker (Lawrenceville Hwy)	Emory (same node as LRT line)	8.07	35
Emory (same node as LRT line)	Atlantic Station/17th St.	5.97	25
Atlantic Station/17th St.	Five Points	3.46	25

Lovejoy-Griffin Extension

Station	Station	Distance	Speed
Lovejoy	Hampton (Atl Motor Speedway)	5.02	45
Hampton (Atl Motor Speedway)	Griffin	10.42	55

CONCEPT PLAN 2 - EXPRESS BUS ROUTE CHANGES

I-20 East	1	Add a Stonecrest to Southern Crescent MARTA route Service frequencies - 30 peak/60 midday - 2 dir. Include a Southern Crescent to Airport connection.
	2	Extend Route 420/420R out to Covington Modify 420 freq. to 15/30. Make 420R freq. 30/30. Add p/r in Covington area.
	3	Add midday service on GR 428 (30 min.).
I-75 South	1	Turnback GR 430 at Southern Crescent MARTA. Modify to 2-dir. Service at 10 peak/30 midday (both dir.).
	2	No change to GR 430M
	3	Eliminate GR 430R
	4	No change to GR 431
	5	Turnback GR 432 at Southern Crescent MARTA. No freq. change.
	6	Turnback GR 433 at Southern Crescent MARTA. No freq. change. Modify freq. to 10 peak/30 midday (both dir.)
	7	Turnback GR 434 at Southern Crescent MARTA. No freq. change.
	8	Turnback GR 440J and GR 440J (R) at Southern Crescent MARTA. Modify freq. 30 peak/30 midday (both dir.)
	9	Turnback GR 440S/SR at Southern Crescent MARTA. Modify freq. at 30 peak/30 midday (both dir.)
	10	Turnback GR 442 at Southern Crescent MARTA. Modify freq. to 30 peak/30 midday (both dir.).
	11	Eliminate GR 441
I-85 South	1	Turnback GR 445A/B at College Park MARTA. Modify freq. to 15 peak/30 midday both dir.
	2	Eliminate GR 450M
	3	Turnback GR 451 at College Park MARTA. Modify freq. to 10 one dir. (peak period only)
	4	Turnback GR 455 at College Park MARTA. Modify freq. to 15 peak/30 midday both dir.
I-20 West	1	Turnback GR 460/460R at Holmes MARTA. Modify freq. to 10 peak/15 midday both dir.
	2	No changes to GR 461/461R
	3	Turnback GR 462 at Holmes MARTA. Keep freq. at 15 peak dir, peak period only.
	4	Eliminate GR 463.
	5	No change to GR 465 A/B
	6	Turnback GR 470/470R at Holmes MARTA. Modify freq. to 15 peak/30 midday both dir.
	7	No change to GR 475
GA 400	1	Eliminate 140/140A MANSEL
	2	Eliminate 143/143A WINDWRDXP
	3	Turnback GR 400NS at Windward. Modify freq. to 15 peak/30 midday both dir.
	4	Eliminate GR 400D
	5	Modify freq. for GR 407 to 30 peak/60 midday (both dir.)
	6	Change GR 408/408R freq. to 30 peak/60 midday (both dir.)
	7	No change to GR 409
I-85 NE	1	Eliminate GR 410
	2	Eliminate GR 412/412R
	3	Eliminate GR 412/412R OP
	4	Turnback GR 413 at SR 316 MARTA. Change peak freq. to 15-min (one dir.).
	5	Turnback GR 415 at SR 316 MARTA. Change peak freq. to 15-min (2 dir.).
	6	Keep GW 101/101A, but turnback at SR 316. Change freq. to 10 peak/15 midday.
	7	Eliminate GW 102/102A
	8	Eliminate GW 103/103A
	9	Turnback GW 104A at SR 316 MARTA. No change in freq.
	10	Turnback GW 104B at SR 316 MARTA. Modify freq. to 15 peak/30 midday, both dir.
I-75 NW	1	Eliminate C100 DB/DBR
	2	Eliminate C 100 DX
	3	Turnback C100 MA/MAR at Chastain Rd. LRT Modify freq. to 10 peak/15 midday (both dir.)
	4	No changes to C 100 P2/P2R route.
	5	Eliminate C101 DX
	6	Eliminate C 101 M/MR
	7	Eliminate C 102 MX
	8	Turnback C 104M/MR at Cumberland LRT. Keep freq. at 10 peak/30 midday.
	9	Keep C 105P/PR in network. No change in freq.
	10	Eliminate C 106M2/M2R.
	11	Eliminate C 109D/DR.
	12	Turnback GR 477A/B at Cumberland LRT. Change freq to 15 pk/30 mid.
	13	Keep GR 484 in network. Modify freq. to 15 peak/30 midday, both dir.
	14	Turnback GR 490A/B at Chastain Rd. LRT. Change freq. to 15 peak/30 midday.
	15	Turnback GR 492 at Chastain Rd. LRT Change freq. to 15 peak/no midday (both dir.).
I-285	1	Modify GR 427 freq. to 30 peak/30 midday both dir. Current coding seems wrong. Check stop patterns. Make sure there are stops at Doraville & Dunwoody
	2	Extend GR 488A/B to Airport. Change midday freq. to 30-min. Change Holmes Stop to the new I-285/MLK MARTA stop.
	3	Change GR 418 freq. to 30 peak/60 midday.
	4	Add new route - I-285/MLK-Cumberland-Perimeter (same stops as GR 488A/B. Code at 30 peak/no off-peak.

APPENDIX C
CONCEPT PLAN MAPS



